The American Fertilizer

94 JUNE 21, 1941 No. 13

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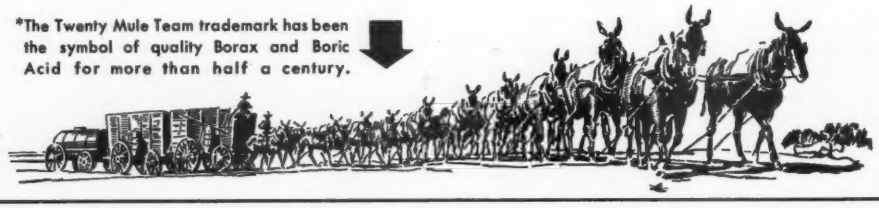

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See Page 25

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"That man is a benefactor to his race who makes two blades of grass to grow where but one grew before."

Vol. 94 JUNE 21, 1941 No. 13

The 1941 Annual Convention

National Fertilizer Association Surveys Prospects for Industry at 17th Annual Meeting. No Shortage of Materials Expected. John A. Miller Elected President.

AFTER a fertilizer year that broke all tonnage records, the fertilizer industry could assemble at White Sulphur Springs for the 17th Annual Convention of The National Fertilizer Association on June 9th, 10th and 11th, with the feeling quite different from that of a year ago. The past season demonstrated that in spite of the War an ample supply of fertilizer materials is and will be available. The emphasis was placed upon this phase of the industry's problems when the program was arranged. The list of speakers included men who are engaged in the production of materials, as well as C. C. Concannon, of the U. S. Bureau of Foreign and Domestic Commerce. The balance of the program was devoted to the problems of agriculture, present and future, as they are affected by war conditions.

In his opening address, which is given in full in this issue, President Sanford cited the records of the past season's output and emphasized the constant increase in plant food content in the grades now being marketed.

Nitrogen Supplies Ample

Despite the fact that during the World War the country was entirely dependent upon foreign sources for nitrogen, we now have the capacity to produce all the nitrogen needed for munitions and fertilizer, C. C. Concannon, Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce, told the Convention.

"The nitrogen requirements of the Army and Navy of the United States and of the government of any country whose needs the President deems vital to the defense of the United States, can be supplied by American plants," he revealed in making an important statement on supplies of this vital chemical.

"Although ammonia supplies are tight at the present moment, the future outlook is favored by increased supplies from the three nitrogen plants in course of construction, and the possibility of obtaining some additional nitrogen from Canadian plants. The nitrogen supply will be watched closely by the Government and every effort will be made to furnish the normal needs of agriculture without recourse to priority regulations," he said.

Phosphate and Transportation Problems

"Although there are ample supplies of raw phosphate rock for fertilizer use, the superphosphate manufacturer during the next year faces many factors beyond his control," said M. H. McCord, The Davison Chemical Corp., Baltimore, Md., in an address "Problems Confronting the Phosphate Producers." "Transportation is the unknown factor. The Maritime Commission proposes to take over coastwise vessels now handling rock and sulphur to principal seaboard superphosphate-producing centers. This will mean transportation of more than one million tons of rock phosphate and one-half million tons of sulphur one thousand miles or more from the mines by rail. Railroads claim they can handle these northward movements together with increased demands on other commodities. Their claim is very questionable. Eighty per cent of the cost of superphosphate at the factory is for raw materials so that increase in the cost of rock and sulphur is reflected at once in the product."

H. M. Albright, Vice-President United States Potash Co., Inc., New York, N. Y., dis-

cussed the other important fertilizer chemical, potash, contrasted conditions of potash supplies in the first World War with those of the present time. "Because we were dependent on foreign sources for our potash then, and European supplies were cut off in the World War, little potash could be produced in the United States by various processes, all of them expensive," he said. "Only small supplies were ever available. Prices soared from $35.00 to $350.00, and even $500.00 a ton for 50 per cent muriate."

"Now there is almost sufficient high-grade muriate to supply the requirements of the American market for both chemicals and fertilizers. Any deficiency that may occur can easily be supplied with New Mexico run-of-mine salts of satisfactory grade," he said. "Potash prices are approximately the same as when the present war began and are about $10.00 a ton lower than they were in 1914. New price lists just issued by three of the four large American producers of potash promise continuance of all favorable conditions as to quantity, quality, and price."

No Time for Agricultural War Boom

In his address "Agriculture After the War," Charles J. Brand, Executive Secretary and Treasurer of the Association, urged that agriculture guard against a repetition of the destructive expansion which occurred during the last World War. He surveyed the food situation in those countries who formerly were our best agricultural export markets and pointed out the permanent changes which would probably be made at the end of the present conflict. Mr. Brand's address is also given in full in this issue.

Edward R. Weidlein, Director, Mellon Institute of Industrial Research and Chief of Chemicals Division, O. P. M., outlined the tremendous task facing the chemical industry in national defense and sketched the organization which is working to meet the demands. Opportunities for southern agriculture and relief of stagnation brought about by the practical annihilation of foreign markets for cotton and tobacco were told by R. F. Poole, President, Clemson College, Clemson, S. C.

Dr. E. R. Weidlein said that the chemical industry has a job of gigantic and almost alarming dimensions cut out for it. "This immense task is complicated by the fact that modern war demands the most formidable and at the same time the most delicate combination of machinery ever produced in volume," Dr. Weidlein pointed out. "The country has been industrially unprepared for protection from attack. For our future welfare, therefore, martial machinery must be built from the ground up.

"There is a great need for technically trained men," he said. "In my opinion, every professional chemist, chemical engineer, and technician will be needed to carry out effectively the essential projects required. Every effort must be made to supply the needs of defense industries for chemical engineers."

"Southern States contain many opportunities for agricultural pursuits," said Dr. R. F. Poole, President of Clemson College. "Agricultural stagnation in Southern States is greatly influenced by inadequate research and insufficient scientific personnel to promote latent but visible opportunities."

Other ways to stability in the south which he outlined are: diversification; scientifically developed pastures; breeding of plants with resistance to disease; insects; cold and drought; and a better understanding of crop, soil and fertilizer relations. The south too he said should look toward better animal and plant balancing, merchant and farmer cooperation, and a strong philosophy of education with less emphasis on synthetic sociology and more on economics and vocations.

The Annual Dinner of the Association

Many factors and moves in the war effort are building the framework of a socialist society in the United States, Merle Thorpe, Editor, Nation's Business, warned the industry at the Annual Dinner held on June 10th.

"Behind the scenes in Washington today a titanic struggle is under way," said Mr. Thorpe. "The battle lines are drawn. On one side are those who would change our form of society. On the other side are business men who wish to organize the country's industrial machine for the greatest war aid, but who, after the war effort is over, wish to see a return to individual ownership and operation of industry. They fear, and rightly, that many moves in the war effort will result in a more or less permanent collectivist or socialistic framework of American society.

"They fear deeply the possible destruction of the American way of life. They feel that it is a real threat, because some of our leaders, by their own admission, have lost faith in America before the present emergency arose, and are today in the Nation's distress, working for a new order of their own—an America of nationalized industry and agriculture, a regimented way of life."

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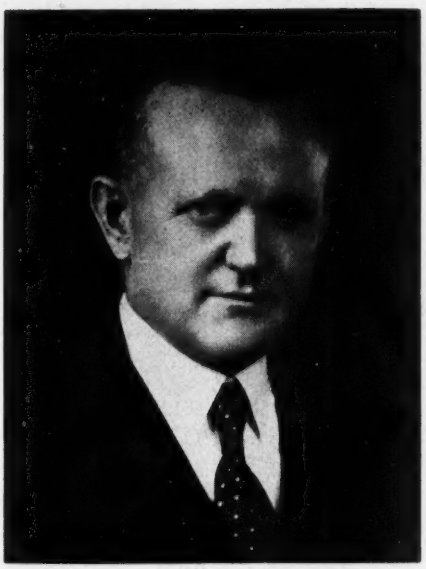
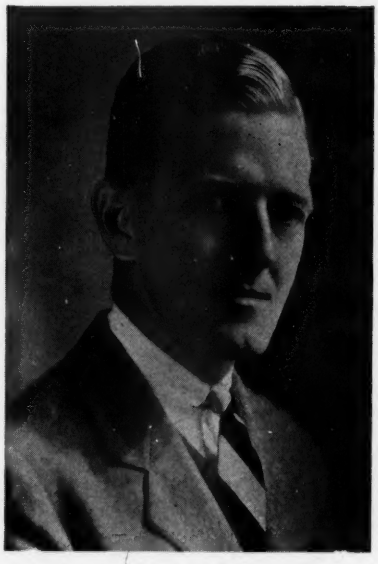
Officers of The National Fertilizer Association



JOHN E. SANFORD
President, 1940-1941



JOHN A. MILLER
President-elect, 1941-1942

CHARLES J. BRAND
Executive Secretary and Treasurer

Annual Convention Opening Address

By JOHN E. SANFORD
President, The National Fertilizer Association

THESE are indeed perilous times. Our country, our industry, and we as individuals, face many known and no doubt more unknown dangers, and must make vital decisions without precedents for guidance. The conflict in Europe continues to give us grave concern over the ultimate effect on our industry, on our agriculture, and on our country's welfare, no matter what the outcome may be. There will be no victor—all are losers in war, of whatever kind.

Our economic situation as an industry appears to be sound. The index price that the farmer pays for fertilizer stands at 96 (1910-14 = 100), whereas the index price he pays for all he buys is 124. Relatively, fertilizer is cheap though higher labor and transportation costs must of necessity be reflected. Farm cash income in 1940 was $9,100,000,000 as compared with $8,540,000,000 in 1939. Official estimates indicate it will reach $10,000,000,000 in 1941.

Although there is a surplus of food and fibre crops in sight at the moment, sooner or later we shall be called upon to furnish these commodities to feed and clothe a goodly part of Europe. Increased use of plant food will be recommended for their production.

In the decade 1930 to 1940, fertilizer consumption on cotton was reduced 667,000 tons, but this loss was more than offset by the 755,000 tons increase in use on other crops. In other words, our market is becoming more diversified. The year 1940 saw the heaviest consumption in terms of fertilizer tonnage in our history, and an even heavier consumption of plant food because of the higher-analysis grades of fertilizer sold. In 1937, the previous peak year, the fertilizer industry sold 8,195,500 tons of fertilizer and the Federal Government distributed 471,500 tons, making a total consumption of 8,310,850 tons. Tag sales for the first four months of 1941 were 9 per cent higher than they were for the same period in 1940. Present indications point to an increase in fertilizer consumption for the 1941 year. In general it seems there will be adequate materials for our fertilizer needs in the 1942 fertilizer year. Other speakers on the program this morning will no doubt give us some of the details of raw material supply.

Transportation confronts us with serious problems. The diversion of ships from coastwise movements has dangerously interfered with our coastwise and intercoastal shipments of sulphur, phosphate rock, and potash. To throw this movement entirely into rail transportation may severely tax the facilities of that agency, to say nothing of the increased cost of such transportation and increased congestion and costs in factories designed to receive materials by water. The interests of our industry in these matters have been placed before the Maritime Commission and Defense Agencies in an effort to insure that our needs will receive their due share of consideration if and when shipping priorities, allocations, and assignments become effective.

Your Association, through its Committees and staff, has accomplished much during the past year. In cooperation with The American Society of Agronomy, the much-needed book "Hunger Signs in Crops" has been published. Over 7,000 copies have been sold and the book has been so well received that orders continue to be received in large numbers. Our thanks to the authors for a job well done. The color pasture film "Green Acres" has now been shown to more than 3,000 farm audiences, totaling some 230,000 people. Our new color film "Putting Plant Food to Work" is now being circulated with excellent reception. Over half a million pamphlets have been distributed. Many meetings and conferences with agricultural workers throughout the country have been helpful in developing understanding relationships.

Our Washington office is called into daily, and at times almost hourly conference by the many agricultural and defense agencies of the Government, charged with the grave duties of perfecting our preparedness program.

We are trying to do our part, and in closing I wish to repeat what I said here a year ago: "I am sure I speak with your approval when I offer our industry's full and complete cooperation with the preparedness program now underway, as a preventive of war, and, if need be, as defense against all enemies."

Agriculture After the War*

By CHARLES J. BRAND

Executive Secretary and Treasurer, The National Fertilizer Association, Washington, D. C.

WHEN I try to project my thoughts into the future of agriculture, it seems good, first, to get my feet down a bit into the hard earth of the past. For history often repeats itself and may foretell something of the future.

I promise not to go back too far nor to take too long. Just a sketch.

From 1890 to 1909 we had a period that should have gladdened the heart of the consumer and the wage-paying industrialist, though not the farmer. Not once in 25 years had the index number of farm prices risen to a parity with the all-commodities index.

The first ten years of this period are remembered because of one of the worst droughts in our history; the panic of 1893; the closing of hundreds of banks; receiverships for 182 railroads; commercial failures on an hitherto unprecedented scale; strikes and riots; the empty dinner pail; falling wholesale prices, and the march on Washington by Gen. Jacob Coxey's army of the unemployed.

From 1909 to 1914, we had the peak of the famous old "high cost of living" era. Farm prices rose above parity with all-commodities for the first time since 1884. The high cost of food became a serious problem fraught with political dangers. Better farm income made farm mortgages easy to pay; in fact, agriculture was prosperous but housewives in New York and other eastern cities began to inveigh against the farmer and the "middle man." Boycotting of food stores became a commonplace. Twenty-five years of low prices for farm-grown foods seems to have created the presumption of a vested right for the consumer to have such prices.

From mid-1914 to 1920 we had the World War period with its immediate post-war inflationary movement. At the beginning, there was a temporary period of acute depression. Prices dropped and commodity and stock exchanges were closed. Then followed the greatest and unhealthiest price boom in our history. The index number of prices of farm products rose to its maximum of 221 in 1919, and that of all-commodities to 296 in 1920.

The World War changed our status from a debtor to a creditor nation. It inflated farm prices and debts and real estate values, and set the stage for political changes and economic restrictions throughout the world that have limited international trade to this day, and have contributed much to bringing on the present war. The World War was responsible for greater changes in the economic and financial structure of the world than any other event that has occurred in history. In our agriculture it was responsible for an expansion of between 30,000,000 and 40,000,000 acres of crops, and we have not yet recovered from the bad effects of that ill-directed expansion.

From 1920 to 1929, we experienced an ebbing and flowing effort on the part of our economic system to become readjusted and stabilized. In May, 1920, the index of wholesale prices was 244 on the 1910-14 basis of 100. In June the panic began. Price-wise it continued for 13 months. Falling only one point each in June and July, the drop gathered momentum with a six point recession in August, nine in September, and 16 each in October and November. It reached its greatest fall for a single month of 19 in December. Then the drop began gradually to taper off, and by July, 1921, it had stopped. The total drop in the index from June, 1920, to July, 1921, was from 244 to 141, a 42 per cent decline. Industry was stopped in its tracks, unemployment seized the nation with blasting suddenness, and commercial and financial failures reached a scale never before heard of anywhere in the world. The economic position of our agriculture was so weakened that it has not recovered fully to this date. Cotton dropped from 38 cents at the farm in May, 1920, to 9 cents twelve months later. The price of sheep dropped from $10.66 a hundred in April, 1920, to $3.84 in November, 1921. Potatoes fell from $4.21 a bushel in June, 1920, to 67 cents in June, 1921.

Urban America, due to a variety of causes, soon recovered from the panic and from 1922 to 1929 enjoyed a period of reasonable stability.

In 1929 we entered another nose-dive depression, the greatest peace-time economic breakdown the world has witnessed. The all-commodity price index fell from 141 in August, 1929, to 93 in June, 1932.

Most of us remember the moderate improvement that took place between 1933 and 1937.

* An address at the Seventeenth Annual Convention of the Association, White Sulphur Springs, W. Va., June 10, 1941.

The index of wholesale prices of all-commodities advanced from 96 in the former year to 126 in the latter. Prices received by farmers did not show the same improvement. They did advance from an index number of 75 in 1933 to an index number of 111 in 1937. Thereafter prices turned down again and they did not turn upward until the force of the present national defense effort began to make itself felt.

It would be going too far to prophesy that our national economic organism, including our agriculture, will react the same after the present war as it did after the World War. It is not violent, however, to expect that any organism will respond at least similarly to like stimuli under like conditions.

With this general retrospective size-up in mind, let us take a look at the present and prospective agricultural situation in one or two countries that in the past have played an important role in our farmer's well-being.

Let us take first—

The United Kingdom

In these comments that term refers to the whole of the British Isles, excluding Eire, the Irish Free State. The simple name, "England," might be used more conveniently.

Great Britain, which of course includes England, Scotland, Wales, and all of Ireland, has for more than a century been one of the largest purchasers of our exports of foods and fibres. The United Kingdom has a total area of nearly 60,000,000 acres. Of this total, 12,646,000 acres were in arable crops and 309,000 in tree and bush crops in 1938. Meadow and pasture land, suitable for cultivation but not presently in crops, totaled 35,385,000 acres.

Since the present war began in 1939, according to a report on Britain's food campaign, 2,000,000 acres of grassland have been plowed up. There is a prospect that 1,750,000 acres more may be plowed up in 1941. With these additions, the total area in cultivation would be something more than 16,000,000 acres. That is about where Britain stood after the end of the World War. In the intervening years about 4,000,000 acres went back to grass. According to Sir John Russell, the peak area of land under arable cultivation in Great Britain was reached in 1872 at 18,400,000 acres. That was about ½ of the total area now available for cropping.

With the serious decline of international relations that has taken place during the past four years, the British Government has again accepted the view that home agriculture is one of the country's chief arms of defense. At least four suggestions have been noted looking toward the possibility that the United Kingdom might produce possibly two-thirds of its food supplies instead of one-third. The suggestions contemplate—

1. Breaking up an additional 8,000,000 acres of grassland and devoting them to arable farming. This would bring the arable acreage and the meadow and pasture acreage roughly into balance at around 24,000,000 acres each. Such a move would call for infinite care and wisdom.

2. Taking advantage of every modern improvement in crop fertilization, use of better varieties, control of insect and plant diseases, better rotations, extensive development of drainage, and utilization of every advanced mechanical device to give effect to a national policy designed for maximum food production per acre.

3. Giving expert assistance and national direction so that the crops and products grown will serve to the fullest extent the national feeding program. Even under war conditions, British farmers largely grow the crops that give them the best financial return, not those that give the Nation the best nutritional return. As no farm laborer may leave the farm for other employment, it is perhaps not unfair to expect the farmers themselves to change their practices to meet the nutritional needs of the people.

4. With half of the arable land in grass even after an extensive plow-up program has been put in force, many feel that the grassland improvement program of Sir George Stapledon and Sir John Orr should be prosecuted with great energy. Improved pasture will provide two or three times as much food as neglected pastures and it will be better food.

The fifth suggestion has been made by Capt. R. G. M. Wilson of Cambridge, who believes that at the close of the war agriculture should be used to absorb several million men from the fighting services.

Immediately before the present war, Britain imported about 70 per cent of her food and nearly all of her concentrated animal feeds. With shipping space growing scarcer and scarcer for every use except to move war materials, in order to increase home production, the Minister of Agriculture was given great power under the Defense of the Realm Regulations. So food production and food distribution have become largely matters of direct governmental regulation. Government is the buyer of live-

stock, corn, sugar beets, potatoes, and milk; all at guaranteed prices. Prices of fodder and feeding stuffs are also controlled. The Minister has power to require every farmer to plow up a certain proportion of his grass for which he is indemnified to the extent of two pounds or about $8.00 an acre. Those who fail to carry out the regulations of the Ministry may be dispossessed of their land.

Through local committees, the farmer is being taught more intimately than ever in the past new technical and scientific methods.

The staffs of the Agricultural Colleges and Experiment Stations are travelling about the Kingdom showing farmers better methods and seeing that they are followed. Agricultural policy is directed to national food needs and the Ministry of Food cooperates with the Ministry of Agriculture in enforcing the national policy. Production of milk, potatoes, sugar beets, wheat, roots and vegetables is being increased greatly and next year it is expected that 1,000,000 acres of potatoes will be grown. Britain will provide one-third of her total sugar needs from her sugar beet harvest, and onion production is to be increased 14 times above the peacetime average. Hitherto a large portion of Britain's onions has been received from the Isle of Jersey and other islands such as the Azores.

Grass vs. Crop Farming

Sir Thomas Middleton, a great British agricultural authority and then President of the Section of Agriculture of the British Association for the Advancement of Science, in an address before the Dundee Meeting in 1939, made it very clear that in any future emergency the excessive proportion of land devoted to grass would have to give way to crop farming.

While Sir Thomas emphasized the compulsions calling for a ploughing-up campaign, he also recognized the economic circumstances that tended to force British farmers to stick so tenaciously to their grasslands. He also understands the very real, but by no means unsurmountable difficulties, that confront an all-grass farmer when he tries to turn to cropping. Farmers engaged in diversified farming, generally speaking the small farmers and less well off, are burdened with the chief responsibility. Both classes are short of machines, and of skilled farm labor. The latter require experience and industry has for many decades drawn the best men from the farms; but machines, particularly tractors, should have been readily supplied.

Three paragraphs from the Dundee address are quoted here as they show the position so convincingly.

"In the pre-war years 1909-13 the country was producing about 35 per cent of its energy requirements, in 1918 the Food Production campaign succeeded in raising the home supply to about 42 per cent. Entering the war with home supplies that would have maintained us for 125 days, we produced in 1918 the equivalent of 155 days' normal needs. Because of lack of labour, machinery and implements the difficulties we faced were extreme. With the number of tractors now available, grassland could be broken up rapidly; but it is one thing to break up grassland and quite another thing to farm it properly, and it is the farming, rather than the breaking up, that calls for careful preparatory work.

"But why break up grassland? That was the question asked in 1915 and 1916; it caused much controversy and would do so again.

"The answer is that of human food, of the kind which we should chiefly want in war, other crops produce much more than grass. In the book 'Food Production in War' already mentioned I have given many figures in support of this statement which I need not cite here; one general statement will suffice. In the years 1909-13 the soils of the United Kingdom maintained a population of about 15½ millions. I estimated that less than one-third of this total had been maintained by our 34 million acres of cultivated grassland (*i.e.*, had been provided with the million Calories per person per annum necessary), and that over two-thirds had been maintained by our 13 million acres under crops other than grass. Per 100 acres of land 12 and 80 persons respectively had been provided for. These figures, though they relate to the energy value of foods only and not to other things which are essential in our diet, give a fairly correct idea of the relative importance of grass and other crops in providing war rations. The chief reason for the very low production shown by grass is that a large percentage of our grassland is of poor quality and is grazed by store cattle and sheep. For the average pasture grazed by dairy cows my figure was 41 persons maintained per 100 acres; well-managed grass carrying good cows might indeed provide the energy needs of 75 to 80 persons per 100 acres."

For this talk I am assuming that the British will win the war. Particularly in that event, our farmers must look forward to continued recession in our export trade in farm products.

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Superphosphate Production Continues at Peak Level 24

The N. F. A. Golf Tournament

The golfing events at the National Fertilizer Association Convention again proved to be the leading feature of the entertainment program. The committee had arranged a well-rounded list of competitions which gave opportunities to golfers of every degree of skill.

A new feature added this year was a daily prize for the drive which came closest to the pin on the short second hole. Some of the decisions had to be figured by the fraction of an inch but the judges finished the three-day tour of duty without arousing mob violence.

A total of 49 prizes had been generously donated by 17 companies and The National Fertilizer Association.

The 1941 Golf Committee was composed of: A. L. Walker, Jr., Chairman; A. B. Baker, W. J. Murphy, E. H. Jones, H. F. Ayer, C. F. Burroughs, Jr., J. M. Coppinger.

The winners of the various contests were as follows:

MONDAY, JUNE 9TH

Medal Play Handicap

Winner—Lem P. Woods, The Gulf Fertilizer Co., Tampa.

Runner-up—J. P. Brinton, Jr., Hydrocarbon Products Co., Inc., New York City.

Match Play vs. Par

Winner—W. W. Johnson, The Stadler Products Co., Cleveland.

Runner-up—John R. Rice, Liberty Limestone Corp., Rocky Point, Va.

Tombstone Handicap

Winner—L. E. Britton, Consolidated Rendering Co., Boston.

Runner-up—J. S. Whittington, F. W. Berk & Co., Inc., New York.

Kickers' Handicap

Winner—Roy S. Marsden, The Barrett Co., Atlanta.

Runner-up—N. F. Caldwell, Southern Shipping Co., Jacksonville.

Veterans' Match Play vs. Par

Winner—S. J. Martenet, E. Rauh & Sons Fertilizer Co., Indianapolis.

Runner-up—George D. Morgan, Morgan Bros., Richmond.

Low Gross

Winner—Weller Noble, Pacific Guano Co., Berkeley, Calif.

Runner-up—H. R. Wemple, Texas Gulf Sulphur Co., New York City.

Closest Drive, Second Hole

Class A—T. E. Bradley, Manito Filler Co., Peoria.

Class B—E. H. Jones, Apothecaries Hall Co., Waterbury.

TUESDAY, JUNE 10TH

Medal Play Handicap

Winner (Gold Cup)—A. McLintock, Texas Gulf Sulphur Co., New York City.

Runner-up—Ben F. Sutherland, Armour Fertilizer Works, Wilmington, N. C.

Match Play vs. Par

Winner—W. J. Murphy, American Potash & Chemical Corp., New York City.

Runner-up—Western Logan, The Barrett Company, San Francisco.

Tombstone Handicap

Winner—J. E. Totman, Summers Fertilizer Co., Baltimore.

Runner-up—R. I. LaMarche, Bagpak, Inc., New York City.

Kickers' Handicap

Winner—S. F. Elwood, The Farmers Fertilizer Co., Columbus, Ohio.

Runner-up—John T. Welch, The Davison Chemical Corp., Columbus, Ohio.

Third—H. B. Baylor, International Agricultural Corp., Atlanta.

Veterans' Medal Handicap

Winner—J. C. Devilbiss, U. S. Potash Company, New York City.

Runner-up—J. S. Coale, I. P. Thomas and Son Co., Camden, N. J.

Low Gross

Winner—J. Edward Barnes, U. S. Potash Co., Atlanta.

Runner-up—A. L. Walker, Jr., Texas Gulf Sulphur Co., New York City.

Closest Drive, Second Hole

Class A—Albert B. Baker, Bradley & Baker, New York City.

Class B—Chas. S. Rauh, E. Rauh & Sons Fertilizer Co., Indianapolis.

WEDNESDAY, JUNE 11TH

Medal Play Handicap

Winner—M. D. Caine, Tennessee Corporation, Cincinnati.

Runner-up—H. L. Taylor, Jr., E. I. duPont de Nemours & Co., Atlanta.

Match Play vs. Par

Winner—Fred J. Woods, The Gulf Fertilizer Co., Tampa.

Runner-up—H. F. Ayer, Swift & Co. Fertilizer Works, Chicago.

Tombstone Handicap

Winner—S. S. Lawrence, Shell Chemical Co., San Francisco.

Runner-up—J. B. S. Holmes, E. I. duPont de Nemours & Co., Wilmington.

Kickers' Handicap

Winner—C. M. Schmidt, Virginia-Carolina Chemical Corp., Carteret, N. J.

Runner-up—J. L. Baskin, Union Potash and Chemical Co., Orlando, Fla.

Low Gross

Winner—H. H. Kemp, Armour Fertilizer Works, Greensboro, N. C.

Runner-up—B. A. Crady, U. S. Potash Co., Meridian, Miss.

Closest Drive, Second Hole

Class A—Western Logan, The Barrett Co., San Francisco.

Class B—R. G. Crammond, Armour Fertilizer Works, Sandusky, Ohio.

JUNE 9TH, 10TH AND 11TH

Three-Day Ringer Handicap

Winner—J. E. Barnes, U. S. Potash Co., Atlanta.

Runner-up—George W. Suggs, The Barrett Company, Atlanta.

LADIES' EVENTS

Ladies' Kickers Handicap

Winner—Mrs. C. M. Harris, New York.

Runner-up—Mrs. J. E. Totman, Baltimore.

Ladies' Putting for Golfers

Winner—Mrs. Ralph Boynton, Atlanta.

Runner-up—Mrs. W. J. Murphy, New York City.

Ladies' Putting for Non-Golfers

Winner—Mrs. J. A. Howell, Richmond.

Runner-up—Mrs. R. G. Crammond, Sandusky, Ohio.

May Tag Sales

Fertilizer sales in May, as measured by the sale of tax tags in 17 states, were moderately below the corresponding month of last year. This decline followed abnormally large sales in April. Total sales in May, according to reports by state control officials to The National Fertilizer Association, amounted to 331,797 tons, 18 per cent below last year and 15 per cent less than two years ago.

Seven of the twelve southern states reported May sales below last year, with the largest declines occurring in Georgia and Mississippi. In the midwestern region a drop in sales in Kentucky was more than sufficient to offset the effect of increases in the four other states.

Total sales in the first five months of this year, January through May, were 6 per cent larger than in the corresponding period of 1940. Increases were reported by all of the 17 states.

This year's aggregate sales have been somewhat below 1937, which was the recent peak year in sales by commercial fertilizer producers. The decline has been due entirely to smaller consumption in the southeast, where the reduction in tobacco acreage has adversely affected fertilizer tonnage. There is an exception in the case of Florida, where sales this year have gone to a new high record. In the south central and midwestern areas fertilizer sales this year have been larger than in any preceding period. This reflects the strong upward trend in the amount of fertilizer used for crops other than cotton and tobacco.

FERTILIZER TAX TAG SALES

State	May				January-May			
	1941		1940	1939	1941		1940	1939
	Per Cent of 1940	Tons	Tons	Tons	Per Cent of 1940	Tons	Tons	Tons
Virginia	86	28,948	33,655	31,302	103	289,167	282,046	301,400
N. Carolina	102	52,400	51,446	69,414	103	967,275	936,002	1,075,381
S. Carolina	137	39,194	28,596	35,864	104	643,957	618,254	620,735
Georgia	29	11,500	39,486	42,997	105	734,872	697,010	658,150
Florida	111	53,654	48,456	57,322	116	305,545	262,500	246,222
Alabama	61	28,000	45,650	40,040	101	554,950	551,650	537,440
Mississippi	27	11,005	40,900	7,488	108	305,042	282,170	264,863
Tennessee	46	11,608	25,349	21,961	101	119,271	117,803	113,915
Arkansas	99	7,050	7,100	1,200	120	111,250	93,050	64,100
Louisiana	137	5,350	3,900	1,075	111	145,580	131,311	121,876
Texas	220	8,855	4,025	3,495	114	115,947	101,581	80,169
Oklahoma	85	118	139	155	161	8,755	5,432	6,183
Total South	78	257,682	328,702	312,313	105	4,301,611	4,078,809	4,090,434
Indiana	101	40,233	39,706	45,050	115	200,542	175,082	156,658
Illinois	170	16,148	9,525	9,687	129	46,476	36,161	29,575
Kentucky	60	16,847	28,147	23,758	107	93,634	87,241	85,581
Missouri	193	752	389	39	139	36,283	26,159	20,866
Kansas	...	135	5	135	209	5,568	2,658	1,455
Total Midwest	95	74,115	77,772	78,669	117	382,503	327,301	294,135
Grand Total	82	331,797	406,474	390,982	106	4,684,114	4,406,110	4,384,569

BRADLEY & BAKER

FERTILIZER MATERIALS - FEEDSTUFFS

AGENTS - IMPORTERS - BROKERS

155 E. 44th Street
NEW YORK

BRANCHES

Clinton St. & Danville Ave.
Baltimore, Md.

505 Royster Building
Norfolk, Va.

1252 West Beaver Street
Jacksonville, Fla.

FERTILIZER MATERIALS MARKET

NEW YORK

Market Quiet During Week of Fertilizer Convention. Ample Potash Supplies Promised. Transportation Costs May Increase Superphosphate Prices. Urea Prices Reduced

Exclusive Correspondence to "The American Fertilizer."

NEW YORK, June 17, 1941.

The Seventeenth Annual Fertilizer Convention of the National Fertilizer Association was held last week at White Sulphur Springs, and the meeting was well attended.

It was possibly due to the convening of many of the buyers that the markets on fertilizer materials were especially quiet.

Potash

In a discussion of potash at the Convention, the vice-president of one of the larger potash manufacturers advised that sufficient supplies of domestic muriate would be available to take care of the requirements of this market, which confirms advices previously given in this column.

Superphosphate

Superphosphate, up to this time, has not shown any appreciable change in price. In a speech by a representative of one of the large manufacturers of superphosphate, the question of transportation of raw materials for the manufacture of superphosphate was discussed. Ample supplies of phosphate rock and sulphur, for the manufacture of sulphuric acid, are available, but with the taking over of coastwise vessels by the U. S. Government, it will mean the transportation of rock and sulphur by rail. Even if the railroads can handle the material, the increased costs of transportation of the raw materials must be reflected in the price of superphosphate.

Nitrate of Soda

Up to now no prices have been announced for Chilean nitrate of soda.

Urea

The price on urea has been reduced $5.00 per ton, so that this material is now being offered at $80.00 per ton, f.o.b. Belle, West Virginia, or various eastern seaboard ports, in carload lots.

Sulphate of Ammonia

Buyers are now placing their orders for their requirements on sulphate of ammonia, but we believe that most business has not been confirmed as yet.

BALTIMORE

Between-season Lull Deadens Interest in Materials. No New Prices on Chilean Nitrate. Burlap Bag Prices Continue High.

Exclusive Correspondence to "The American Fertilizer."

BALTIMORE, June 17, 1941.

The between-season lull is now on in the fertilizer business, with practically no interest being manifested in supplies of raw materials at the present time. Most of the manufacturers have already covered for their requirements for the fall season, and the market is without feature.

Ammoniates.—The market on feeding tankage is unchanged around $3.60 per unit of nitrogen and 10 cents per unit of B.P.L., f.o.b. basis Baltimore. South American blood is nominally quoted at $3.40 per unit of nitrogen, c.i.f. Baltimore, but freight room is scarce and at a premium.

Nitrogenous Material.—The market continues to rule easy and nominal price is unchanged around $2.75 per unit of nitrogen, f.o.b. Baltimore.

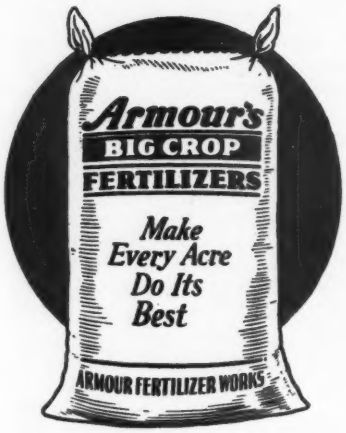
Sulphate of Ammonia.—There is no change in the situation since last report, and manufacturers are covering for their requirements on the basis of schedule of prices recently announced of $29.00 per ton of 2,000 lb., at ports, or $28.00 f.o.b. inland producing points.

Nitrate of Soda.—While domestic manufacturers announced no change in price of bulk material for delivery over balance of this year, up to the present time importers of the Chilean brand have not made any price announcement,

FERTILIZER MATERIALS

LET US QUOTE YOU ON YOUR REQUIREMENTS OF THESE MATERIALS

PHOSPHATE ROCK
SUPERPHOSPHATE
DOUBLE SUPERPHOSPHATE
NITRATE *of* SODA
SULPHURIC ACID
SULPHATE *of* AMMONIA
BONE MEALS
POTASH SALTS
DRIED BLOOD
TANKAGES
COTTONSEED MEAL
BONE BLACK
PIGMENT BLACK
SODIUM FLUOSILICATE



ARMOUR FERTILIZER WORKS

General Offices: Walton Building, Atlanta, Ga.

Division Sales Offices:

Albany, Ga.
Atlanta, Ga.
Augusta, Ga.
Baltimore, Md.
Birmingham, Ala.
Chicago Heights, Ill.
Cincinnati, Ohio
Columbia, S. C.
Columbus, Ga.
East St. Louis, Ill.
Greensboro, N. C.
Havana, Cuba
Houston, Texas
Jacksonville, Fla.
Montgomery, Ala.
Nashville, Tenn.
New Orleans, La.
New York, N. Y.
Norfolk, Va.
Presque Isle, Me.
San Juan, P. R.
Sandusky, Ohio
Wilmington, N. C.

as their current contracts do not expire until the end of this month, at which time prices will doubtless be announced for July, if not for a longer period. On account of the tremendous advance in the cost of bags, it would not be surprising to see higher prices prevail between bulk and bagged prices.

Fish Scrap.—There is very little interest being shown by buyers as the present price of $5.30 per unit of nitrogen and 10 cents per unit of B.P.L., f.o.b. fish factories, for shipment "if and when made," is so much higher than other protein feeds.

Superphosphate.—There have been no new developments, and this material is still quoted subject to change without notice at $8.00 per ton of 2,000 lb., basis 16 per cent for run-of-pile, and $8.50 for flat 16 per cent grade, no charge for average, both in bulk, f.o.b. producers' works, Baltimore. Announcement of higher prices would not be surprising, due to higher cost of production brought about by advance in rock and ocean freight rates.

Bone Meal.—The position of the market remains unchanged and very little buying interest is being manifested. The nominal market is unchanged, with 3 and 50 per cent steamed bone meal being quoted at $37.00 per ton, while 4½ and 47 per cent raw bone meal ranges from $32.00 to $36.00, f.o.b. Baltimore.

Potash.—It is understood that several of the domestic producers have already sold up their estimated production, which would indicate some of the manufacturers have covered for their requirements during the coming season to secure the lowest early buying prices.

Bags.—The burlap market continues high and the present price of plain, new, 10 oz., basis 40 cut 54 in. is around $187.55, delivered Baltimore for next spring season's business, with very little buying interest being shown on account of the excessive cost of burlap bags as compared with paper bags.

ATLANTA

Adequate Supplies of Materials Available but Transportation Presents Serious Problems. Little Change in Prices Evident.

Exclusive Correspondence to "The American Fertilizer."

ATLANTA, June 17, 1941.

The Fertilizer Convention held last week at White Sulphur Springs, West Virginia, was well attended. Various problems confronting the industry were discussed at length and the concensus of opinion seemed to be that there were ample nitrogen supplies for U. S. needs and that potash and superphosphate would also be adequate. The main trouble now seems to be the question of transportation. Quite a number of coastwise ships have been commandeered by the Government and this is putting more of a burden on the rails, with a serious car shortage predicted. Quite a number of buyers are therefore attempting to anticipate their needs and get their supplies in before any serious hinderance to freight movements takes place.

With the prevailing shortage of coastwise tonnage, the ports are being affected adversely, as most of the producers of both potash and nitrogen seem to be giving preference to interior buyers.

There has not been any very radical change in prices since our last report and the markets generally are as follows:

South American Blood.—$3.25 ($3.95 per unit N), c.i.f.

Tankage.—$3.50 ($4.25 per unit N) and 10 cents, c.i.f.

Domestic Nitrogenous.—$2.10 ($2.55½ per unit N), f.o.b. western producing points.

Acidulated Fish.—$3.50 ($4.25½ per unit N) and 50 cents, producing points.

Dried Scrap.—$60.00 to $61.00, f.o.b. fish factories.

Sulphate of Ammonia.—Heavy sales at the

Manufacturers' Sales Agents for **DOMESTIC**

Sulphate of Ammonia

Ammonia Liquor :: Anhydrous Ammonia

HYDROCARBON PRODUCTS CO., INC.

500 Fifth Avenue, New York

new schedule of prices, namely $28.00 ovens or $29.00 ports on a 10 to 12 months basis.

Nitrate of Soda.—Unchanged but spot stocks scarce.

Cottonseed Meal.—Prime 8 per cent. $28.00 Memphis; southeastern mills, $26.00 to $26.50.

CHICAGO

Fertilizer Ammoniate Market Firmer than Usual at this Time of Year. Feed Materials Slightly Higher.

Exclusive Correspondence to "The American Fertilizer."

CHICAGO, June 16, 1941.

A continued firm situation rules in the ammoniate market. Offerings are sparse; some producers have withdrawn from the market, asserting they are "sold up." Conditions similar to those prevailing at present are seldom experienced at this time of year. Bone meal remains firm, with light offerings.

In feed materials, sales are passing at slightly higher prices. Consuming demand has been fair to steady, and stocks are none too heavy.

Nominal prices are as follows: High grade ground fertilizer tankage, $2.50 to $2.75 ($3.04 to $3.34½ per unit N) and 10 cents; standard grades, crushed feeding tankage, $3.50 to $3.60 ($4.25½ to $4.37½ per unit N) and 10 cents; blood, $3.10 to $3.15 ($3.77 to $3.83 per unit N); dry rendered tankage, 77 to 82 cents per unit of protein, Chicago basis.

WILMINGTON

Shortage of Materials Feared. Contracts Placed for Big Volume of Sulphate of Ammonia.

Exclusive Correspondence to "The American Fertilizer."

WILMINGTON, June 16, 1941.

There has been considerable buying during and since the Convention as the buyers are now convinced that they are faced with a serious shortage of most materials. Sulphate of ammonia is being booked rapidly at $29.00 and $30.00, and many of the buyers have been unable to place contracts for their requirements as yet.

Superphosphate has been in a very firm position, owing to the necessity of moving rock and sulphur by rail and the almost certainty of delay in delivery due to lack of rail equipment during the season. Prices are not quoted for shipment after December and the price through that month is 52½ cents per unit P_2O_5, f.o.b. Charleston and Wilmington.

Nitrate of soda is unobtainable and the situation will not improve in time for June consumption.

Dried fish scrap is very firm at $60.00 at the South Atlantic factories, with only a limited tonnage being offered.

CHARLESTON

Buyers Worried over Possible Potash Shortage. Increased Cost of Superphosphate Production May Affect Prices.

Exclusive Correspondence to "The American Fertilizer."

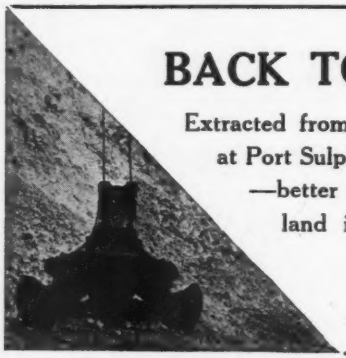
CHARLESTON, June 16, 1941.

Manufacturers generally are worried over an indicated shortage of potash supplies, due to strikes. Buyers in some instances have been promised only a proportion of their last season's consumption by the potash companies.

Nitrogenous.—Domestic can be obtained around $2.40 ($2.91½ per unit N), delivered southeastern ports.

Blood.—Around $3.15 ($3.83 per unit N), Chicago, bulk, and $3.05 to $3.10 ($3.70 to $3.77 per unit N), bagged, c.i.f. Atlantic ports where freights can be obtained.

Fish Meal.—Menhaden meal at $62.00 per ton, f.o.b. Baltimore. Fish meal continues very scarce.



BACK TO THE LAND

Extracted from deposits beneath the Gulf Coast at Port Sulphur, La., and Freeport, Tex., sulphur —better than 99½% pure—goes back to the land in fertilizer to help solve soil problems.

FREEPORT SULPHUR COMPANY
122 East 42nd Street, New York City

USE PLENTY OF SUNSHINE STATE POTASH!

● Good crops need three legs to stand on. Profitable agriculture depends upon soil rich in all three major plant foods: nitrogen, phosphate—and potash. In fact more and more growers are coming to realize that *plenty of potash*, as recommended by local agricultural authorities, is necessary in order to produce larger premium-quality yields at lower cost.

More and more fertilizer manufacturers, too, are supplying producers of all major crops with complete fertilizers adequately balanced with Sunshine State Potash. They know there is no better potash from the grower's point of view. They like Sunshine State Potash themselves because . . . today as in normal times . . . they can depend upon its consistently uniform analysis and careful sizing which makes handling and blending easy.

HIGRADE MURIATE OF POTASH
62/63% K_2O
Also 50% K_2O Grade
MANURE SALTS
Approximately 30% K_2O
Trademark Reg. U. S. Pat. Off.

SUNSHINE STATE POTASH
A PRODUCT OF NEW MEXICO U.S.A.

UNITED STATES POTASH COMPANY, INCORPORATED
30 Rockefeller Plaza, New York, N. Y.

Cottonseed Meal.—Around $29.00 for 8 per cent at Atlanta and $25.00 for 8 per cent at Memphis.

Superphosphate.—The situation continues cloudy as to the price on this material, in view of the advance in the freight on sulphur and the advance in the price of rock.

TENNESSEE PHOSPHATE

Summer Lull in Evidence. Shortage of Water Still Acute. Lack of Freight Car Supply Feared in Fall.

Exclusive Correspondence to "The American Fertilizer."

COLUMBUS, TENN., June 16, 1941.

The summer lull in shipments to all consuming channels is quite in evidence, according to custom prevailing for many years. Fertilizer manufacturers confine their routine withdrawals against contracts to the lowest possible levels to avoid excessive inventories. Farmers are busy in their regular farm work and do not want to take time to spread phosphate in direct application use. Manufacturers in specialty lines who use phosphate rock are the principal recipients of the current shipments.

The long prevalent drouth has been partially broken, to the immediate benefit of pastures and fields, but not near enough rain has come as yet to realize the anxiety as to supplies of washing water for phosphate mining nor the low stage of reserve water for TVA and other hydroelectric power operations.

It is a significant fact that with all the agitation to extend TVA power and navigation development to wider areas, there has been no evidence of development of Duck River. Here with three or four small dams, navigable water could be had to Columbia, over 100,000 horsepower could be developed in a region sadly needing it and the freight rate on phosphate rock could be reduced $1.50 per ton.

Both the Tennessee and the Cumberland, being made navigable, are very much in the public eye, and development of additional power in the small tributaries in already overdeveloped East Tennessee attract much attention, but all of this still leaves the Tennessee Phosphate Field in the middle as far as freight rate benefit is concerned.

Those who remember former conditions twenty to twenty-five years ago, foresee a decided car shortage when the full force of priority orders and consequent diversion of equipment for defense purposes becomes evident. It appears that farmers and others who take their own time about ordering rock for all purposes, so that as usual all will want it at the same time in the same few months of August to October, may find it impossible to get cars when that time comes. It is believed that some June movement and considerably more July movement will be in evidence on account of the few who foresee the real possibilities, but of course most people will wait.

Construction work is proceeding rapidly at the Hoover & Mason plant and at the three new plants of the TVA along Duck River, and all plants are busy getting in stocks for the fall rush.

AGRICULTURE AFTER THE WAR

(Continued from page 11)

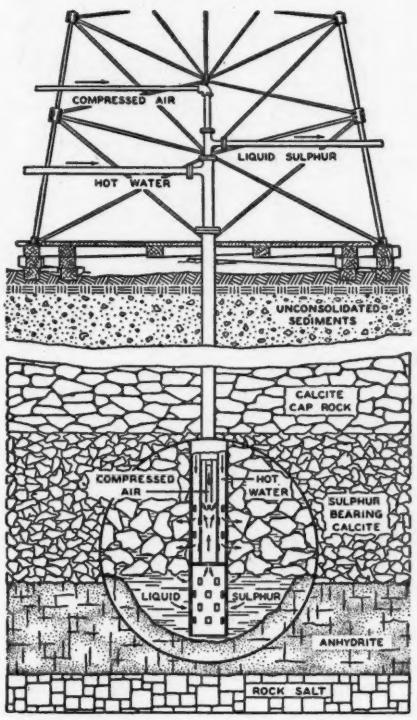
First of all, great weight must be given to the probabilities outlined above, and the rather ready procedures through which increased production may be accomplished. I. D. Blair, an agricultural research worker from New Zealand, recently made the following statement:

"After the war, English agriculture will not be allowed to collapse as happened after the last conflict. The promise has been repeated too often to allow it ever to be forgotten. Maybe this is an empty promise of politicians who seek an immediate response or who feel that when the time comes they may not be in the

PULVERIZED MASCOT LIMESTONE
Trade Mark Registered

MAGNESIUM LIMESTONE
"It's a Dolomite"
American Limestone Company
Knoxville, Tenn.

Interesting Facts about **SULPHUR** *not Generally Known*



Sulphur... How it is mined

We've all heard of dynamite, black powder, and other blasting materials used extensively throughout the mining, contracting, and petroleum industries. There's plenty of punch packed in any of them. By contrast, Sulphur is "blasted" loose from its matrix by a simple substance—superheated water.

Three concentric pipes are driven to the bottom of the Sulphur deposit several hundred feet underground. Superheated water is pumped down one pipe and melts the Sulphur. The liquefied Sulphur flows to a sump at the base of the well and is lifted up through the second pipe by the action of compressed air which is forced down the third.

Novel, isn't it? Yet it takes acres of sulphur-bearing ground, oceans of water. a huge plant, and miles of piping to produce the tonnage of pure Sulphur necessary to supply industry with its needs.

TEXAS GULF SULPHUR CO.
75 E. 45th Street New York City
Mines: Newgulf and Long Point, Texas

position of having to implement the promise. If, as an expressed determination, it is fulfilled, then it seems that here lies the seed of difficult problems which in future will confront overseas exporters of many types of agricultural produce, who have profited by their predominance on the English market to the detriment of the status of so much English farming." (Agricultural History, Vol. 15, No. 1, Jan., 1941, p. 19.)

In the next place the British will probably be compelled by the circumstances that will then exist to give even greater preference than in the past to Canada, Australia, New Zealand, India, South Africa, British East Africa, and the sterling countries in the Western Hemisphere, like Argentina.

Japan

The Land of the Rising Sun affords an opportunity for contrasts. Having in mind that the population of the United Kingdom is about 47,000,000 and that of Japan about 72,000,000, we may make a few comparisons that will disclose some of the possibilities as to intensified agriculture which will affect our own farmers after the war.

The total area of Japan is 94,529,000 acres. Of this total, 14,945,000 acres are devoted to arable cultivation and 1,549,000 acres are devoted to tree and bush crops. Japan, being a mountainous country, its meadow and pasture land suitable for cultivation but not in cultivation is only 8,219,000 acres. She has a total area suitable for cultivation of less than 25,000,000 acres, while the United Kingdom has 48,000,000. In spite of this, Japan is said to import only about $75,000,000 worth of foodstuffs annually. Great Britain's annual food imports in peace time on the other hand, probably average more than $2,500,000,000. In this connection, of course, it is necessary to recall that the annual percapita income in the United Kingdom rules around $450 while our is about $550 and that of Japan is about $85.

Professor Ellsworth Huntington of Yale in a recent letter to me regarding the striking lack of milk and meat in Japan stated in effect that for every quart of milk used there we use 900; and for every pound of meat they eat we eat 360; while in the case of fish they use five times as much as we do.

Although rice constitutes by far the major part of Japan's food imports, she does a good job of growing rice herself as is shown by the following 5-year average yields per acre (1930-1934) based on 100 pound bags for fine rice growing countries: French-Indo China, 6.5; India, 8.5; United States, 13.08; Japan, 24.9; Italy, 26.4.

Stone and Eichelberger in "Peaceful Change" (1937) state that "In Japan, there are 2,418 people for every square mile of arable land, compared with only 100 in the United States and 66 in the Soviet Union."

The United States

The immediate purpose of the foregoing discussion is to provide a basis for some conclusions as to what will be the situation in our own agriculture after the war. That intensive food production programs are possible of fulfilment is evidenced by the fact that in 1938 when England produced about 30 per cent of her food requirements Germany produced about 85 per cent of hers. Japan, living of course on a very low standard of living forced upon her by economic circumstances related to her poverty in natural resources, has for centuries accomplished in self-feeding what with us would be impossible.

A single comparison will show how fortunate we are in the extent and richness of our soils in comparison with England, Germany, and Japan.

The great State of Iowa alone has a total area of 35,430,000 acres, 26,000,000 acres of which are grade 1 land. The total arable land of the three countries named, nearly all of which is of grades 2, 3, and 4, is as follows: England, 48,000,000 acres; Germany, 81,000,000 acres; Japan, less than 25,000,000 acres; while United States has at least 650,000,000 acres.

A few words about our present cotton and wheat situations will be sufficient to convey an adequate idea of how our export market has withered.

In the case of wheat, our domestic supply for the current crop year is placed at about 1,200,-

Stedman FERTILIZER PLANT EQUIPMENT
Dependable for Fifty Years
Founded 1834
All-Steel Self-Contained Fertilizer Mixing Units
Batch Mixers—Dry Batching
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Sulphate of Ammonia
Low Grade Ammoniates
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Fertilizer plants all over the country—large and small—state their needs and we meet them. Large stocks of seasoned materials and ample modern production facilities enable us to make prompt shipments.

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46 to 48% Available Phosphoric Acid

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When you unload acid by the use of a Duriron self-priming centrifugal pump, you don't run the hazard of an explosion with the attendant disaster. You unload through the dome with only atmospheric pressure on the acid.

Avoid danger of explosion, blown gaskets, spraying acids, and excessive leakage. There is no pressure on the tank car; valves are easily kept leak-proof; no operator is required to stand by.

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ACID HANDLING PUMPS AND VALVES

Duriron Pumps and Valves are indispensable if you want the best . . . and ultimately the cheapest . . . acid-handling equipment.

000,000 bushels. The quantity that will be available for export is about 525,000,000 bushels. Exports are expected to total between 30,000,000 and 40,000,000 bushels.

As to cotton, from August 1, 1939, to May 22, 1940, Europe took 4,284,000 running bales. In the same period in 1940-41, she took only 559,000 bales. In the earlier period Japan took 865,000 bales, and up to now this year she has taken only 106,000 bales.

Conclusion

The only precedent we have by which to judge the future is the past, and the only incident in the past that is sufficiently like the present war to be reasonably applicable is the World War. The World War revolutionized the economic and financial structure of the world. Then more than 65 million men were mobilized by the belligerents; nearly 23 million by the four Central Powers, and over 42 million by the 12 Allied Countries. The toll of lives lost is estimated at 23 million, of which 10 million were soldiers and 13 million civilians. The wounded casualties in all the armed forces were estimated at about 22 million. Twenty-three countries, including all of the important countries of the world, declared war against the four Central Powers. The total money cost was 338 billion dollars, of which our share was 51 billion. The Great War of 1914-1918 was truly a World War.

Destructive and widespread as it is, the present Afro-European War is still far from being a true World War, although it seems to be headed directly that way. It promises to change the world's political and social face as the Great War changed its economic and financial structure.

The World War gave American agriculture an unhealthy boom that lasted from 1916 to 1921, a period of five years. Our agriculture has never recovered from the dislocations of that war and that boom.

Presently, the most difficult spots in our agricultural picture are cotton and tobacco in the South, wheat in the Great Plains area and the Pacific Northwest, corn in the Middle West, and fruits that were exported from various parts of the country.

In 1910, when agricultural exports predominated, our total National income attributable to exports of all kinds was 5.83 per cent; in 1917, at the war peak, it was nearly 13 per cent; in 1939 it was 4.16 per cent; and today it is probably down to 3.5 per cent of our total annual income.

In 1921 the percentage of our agricultural income that was attributable to exports was 29.21, while in 1939 it was down to 8.69.

The urge for National self-sufficiency that largely originated in the World War is being greatly intensified in this war. Unfortunate as it may be, the future trend of international trade in agricultural products will no doubt continue downward, particularly as to usual farm products of the temperate regions as distinguished from specialties like rubber, coffee, tea, sugar, jute, sisal, etc. The 30 million acres or thereabout which not many years ago were devoted to growing crops for export must, as quickly as possible, be turned to production of crops for domestic uses. Restricted foreign outlets will confront us for many years, and the greatest caution must be exercised lest we again indulge in an unwise and destructive expansion of our agricultural plant such as that experienced during the World War.

Superphosphate Production Continues at Peak Level

More superphosphate was produced in the first four months of this year than in any similar period in recent years. Production in the last 12 months was also at a record level.

April production at plants reporting to The National Fertilizer Association totaled 330,000 tons, compared with 288,000 tons a year ago, and with 316,000 tons in April, 1937, the preceding peak. The increase over last year was due mainly to increased output at northern plants, as the rise in the South was moderate.

Production has been well maintained in 1941. Usually a seasonal peak is reached in January, followed by successive declines in February, March, and April. This year, however, the increased demand for superphosphate has disrupted the normal seasonal pattern.

In spite of the unusually large production in recent months, there has been no accumulation

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CHEMICO performance guarantees are based on 26 years of specialized experience in acid production and recovery, and the results obtained in world-wide installations.

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CHEMICO PLANTS are PROFITABLE INVESTMENTS

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REG. U.S. PAT. OFF. REG. U.S. PAT. OFF.

. . . . WHEN BORON IS NEEDED TO CORRECT A DEFICIENCY OF THIS IMPORTANT SECONDARY ELEMENT

Agricultural authorities have shown that a lack of Boron in the soil can result in deficiency diseases which seriously impair the yield and quality of crops.

When Boron deficiencies are found, follow the recommendations of local County Agents or State Experiment Stations.

Information and references available on request.

AMERICAN POTASH & CHEMICAL CORPORATION
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Pioneer Producers of Muriate of Potash in America

See Page 4

of stocks. Stocks, in fact, have been reduced. Production in the last twelve months at plants of reporting acidulators was 300,000 tons greater than in the corresponding 1939-1940 period. In spite of this rise in output, stocks are 180,000 tons smaller than a year ago. This would tend to indicate that there has been a strong demand.

Stocks of superphosphate in base and mixed goods at the end of April were at a particularly low level.

Superphosphate Production, Shipments, and Stocks for January-April, 1941 and 1940

Expressed throughout in equivalent tons of 16% A.P.A. Based on reports by acidulators to The National Fertilizer Assn.

	United States	
	1941	1940
Production:		
Bulk superphosphate	1,319,768	1,245,593
Base and mixed goods	46,821	50,104
Total Production	1,366,589	1,295,697
Shipments:		
Superphosphate:		
To mixers	607,235	587,036
To other acidulators	282,677	190,298
To consumers, etc.	578,747	392,384
Total Superphosphate	1,468,659	1,169,718
Base and mixed goods	842,275	761,062
Total Shipments	2,310,934	1,930,780
Stocks—End of April:		
Bulk superphosphate	669,834	698,084
Base and mixed goods	351,327	502,237
Total Stocks	1,021,161	1,200,321

THE 1941 ANNUAL CONVENTION

(Continued from page 6)

Looking ahead to readjustments after the war, Mr. Thorpe said that business must be on guard now and in the future, if it would defeat the forces, working for an economy planned along collectivist lines. "Businessmen have long sensed what philosophers have discovered that economic freedom is blood brother to the five other freedoms of the individual—religion, press, assembly, petition, and speech," he said. "If business holds fast to these ideals and keeps the faith, much of the distress which will naturally follow the war-time boom will be eliminated in the hard days of reconstruction."

The dinner program ended with a showing of the Association's new motion picture "Putting Plantfood to Work."

Officers and Directors Elected

The election of Directors to serve for the succeeding 3-year term resulted in the selection of the following as Directors-at-Large:

C. F. Burroughs (4), F. S. Royster Guano Co., Norfolk, Va.

Leon H. Davis (9), The Southern Cotton Oil Co., New Orleans, La.

W. C. Geoghegan (3), The Davison Chemical Corp., Baltimore, Md.

John E. Sanford (6), Armour Fertilizer Works, Atlanta, Ga.

Directors nominated by the Districts and elected were:

B. H. Brewster, III, (3), The Baugh & Sons Co., Baltimore, Md.

R. L. King (6), Georgia Fertilizer Co., Valdosta, Ga.

F. J. Woods (7), The Gulf Fertilizer Co., Tampa, Fla.

H. A. Parker (8), Sylacauga Fertilizer Co., Sylacauga, Ala.

C. D. Shallenberger (9), Shreveport Fertilizer Co., Shreveport, La.

S. F. Elwood (10), The Farmers Fertilizer Co., Columbus, Ohio.

M. C. Taylor (11), Magnolia Fertilizer Co., Seattle, Wash.

F. N. Bridgers (4), Farmers Cotton Oil Co., Wilson, N. C. was re-elected for the remainder of the term expiring in 1943.

A. H. Case, U. S. Phosphoric Products Div. Tennessee Corp., was elected to fill a vacancy in District 7 expiring in 1942.

At the close of the convention sessions, the new Board of Directors met and elected the following officers to head the Association's activities for the year 1941-1942:

President, John A. Miller, Price Chemical Co., Inc., Louisville, Ky.

Vice-President, A. Lynn Ivey, Virginia-Carolina Chemical Corp., Richmond, Va.

Executive Secretary and Treasurer, Charles J. Brand, Washington, D. C.

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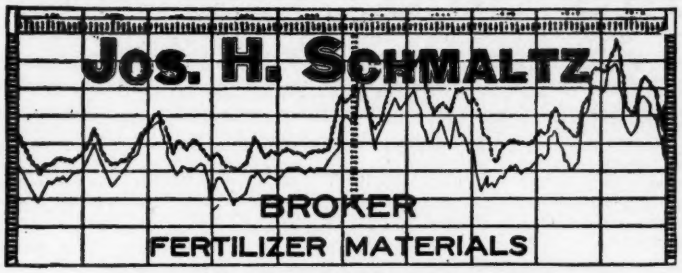
Ammoniates



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Neutralize Free Acid with
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ADAMS' FORMULA RULE

Hundreds in use, and claimed indispensable by every owner.

The Adams' Formula Rule, pocket size, may be carried for years. When soiled it is readily cleaned with a damp cloth. **Price, $1.00.** Kindly remit with order.

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BUYERS' GUIDE

A CLASSIFIED INDEX TO ALL THE ADVERTISERS IN "THE AMERICAN FERTILIZER"

This list contains representative concerns in the Commercial Fertilizer Industry, Including fertilizer manufacturers, machinery and equipment manufacturers, dealers in and manufacturers of commercial fertilizer materials and supplies, brokers, chemists, etc.
For Alphabetical List of Advertisers, see page 33.

ACID BRICK
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Chemical Construction Corp., New York City.

ACID EGGS
Chemical Construction Corp., New York City.

ACIDULATING UNITS
Chemical Construction Corp., New York City.
Sackett & Sons Co., The A. J., Baltimore, Md.

AMMO-PHOS
American Cyanamid Co., New York City.

AMMONIA—Anhydrous
Barrett Company, The, New York City.
DuPont de Nemours & Co., E. I., Wilmington, Del.
Hydrocarbon Products Co., New York City.

AMMONIA LIQUOR
Barrett Company, The, New York City.
DuPont de Nemours & Co., E. I., Wilmington, Del.
Hydrocarbon Products Co., New York City.

AMMONIA OXIDATION UNITS
Chemical Construction Corp., New York City.

AMMONIATING EQUIPMENT
Sackett & Sons Co., The A. J., Baltimore, Md.

AMMONIUM NITRATE SOLUTIONS
Barrett Company, The, New York City

AUTOMATIC ELEVATOR TAKEUPS
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

BABBITT
Sackett & Sons Co., The A. J., Baltimore, Md.

BAGS AND BAGGING—Manufacturers
Bagpak, Inc., New York City.
Bemis Bro. Bag Co., St. Louis, Mo.

BAGS—Cotton
Bemis Bro. Bag Co., St. Louis, Mo.

BAGS—Paper
Bagpak, Inc., New York City.
Bemis Bro. Bag Co., St. Louis, Mo.

BAGS (Waterproof)—Manufacturers
Bemis Bro. Bag Co., St. Louis, Mo.

BAGS—Dealers and Brokers
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Huber & Company, New York City.
Jett, Joseph C., Norfolk, Va.
Taylor, Henry L., Wilmington, N. C.
Wellmann, William E., Baltimore, Md.

BAGGING MACHINES—For Filling Sacks
Atlanta Utility Works, East Point, Ga.
Bagpak, Inc., New York City.
Sackett & Sons Co., The A. J., Baltimore, Md.

BAG PILERS
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.

BEARINGS
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

BELT LACING
Sackett & Sons Co., The A. J., Baltimore, Md.

BELTING—Chain
Atlanta Utility Works, East Point, Ga.
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

BELTING—Leather, Rubber, Canvas
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Sackett & Sons Co., The A. J., Baltimore, Md.

BOILERS—Steam
Atlanta Utility Works, East Point, Ga.

BONE BLACK
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Huber & Company, New York City.

BONE PRODUCTS
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
Jett, Joseph C., Norfolk, Va.
McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.
Wellmann, William E., Baltimore, Md.

BORAX AND BORIC ACID
American Potash and Chem. Corp., New York City.
Pacific Coast Borax Co., New York City.

BROKERS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
Jett, Joseph C., Norfolk, Va.
Keim, Samuel L., Philadelphia, Pa.
McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.
Taylor, Henry L., Wilmington, N. C.
Wellmann, William E., Baltimore, Md.

BUCKETS—Elevator
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

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NORTH CAROLINA BANK BLDG., WILMINGTON, N. C.
Menhaden Fish Products and Fertilizer Materials

A Classified Index to Advertisers in "The American Fertilizer"

BUYERS' GUIDE

For an Alphabetical List of all the Advertisers, see page 33

BUCKETS—For Hoists, Cranes, etc., Clam Shell, Orange Peel, Drag line, Special; Electrically Operated and Multi Power
Hayward Company, The, New York City.
Link-Belt Company, Philadelphia, Chicago.

BURNERS—Sulphur
Chemical Construction Corp., New York City.

BURNERS—Oil
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.

CABLEWAYS
Hayward Company, The, New York City.

CARBONATE OF AMMONIA
American Agricultural Chemical Co., New York City.
DuPont de Nemours & Co., E. I., Wilmington, Del.

CARS—For Moving Materials
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CARTS—Fertilizer, Standard and Roller Bearing
Atlanta Utility Works, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.

CASTINGS—Acid Resisting
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Duriron Co., Inc., The, Dayton, Ohio.

CASTINGS—Iron and Steel
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CEMENT—Acid-Proof
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Chemical Construction Corp., New York City.

CHAIN DRIVES—Silent
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CHAINS AND SPROCKETS
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CHAMBERS—Acid
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.

CHEMICAL APPARATUS
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Duriron Co., Inc., The, Dayton, Ohio.
Monarch Mfg. Works, Inc., Philadelphia, Pa.

CHEMICALS
American Agricultural Chemical Co., New York City.
American Cyanamid Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Barrett Company, The, New York City.
Bradley & Baker, New York City.
DuPont de Nemours & Co., E. I., Wilmington, Del.

CHEMICALS—Continued
Huber & Company, New York City.
Phosphate Mining Co., The, New York City.
Wellmann, William E., Baltimore, Md.

CHEMICAL PLANT CONSTRUCTION
Atlanta Utility Works, East Point, Ga.
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CHEMISTS AND ASSAYERS
Gascoyne & Co., Baltimore, Md.
Shuey & Company, Inc., Savannah, Ga.
Stillwell & Gladding, New York City.
Wiley & Company, Baltimore, Md.

CLUTCHES
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CONCENTRATORS—Sulphuric Acid
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.

CONDITIONERS AND FILLERS
American Limestone Co., Knoxville, Tenn.
Phosphate Mining Co., The, New York City.

CONTACT ACID PLANTS
Chemical Construction Corp., New York City.

COPPER SULPHATE
Tennessee Corporation, Atlanta, Ga.

COTTONSEED PRODUCTS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
Jett, Joseph C., Norfolk, Va.
Schmaltz, Jos. H., Chicago, Ill.
Taylor, Henry L., Wilmington, N. C.
Wellmann, William E., Baltimore, Md.

CRANES AND DERRICKS
Hayward Company, The, New York City.
Link-Belt Company, Philadelphia, Chicago.
Link-Belt Speeder Corp., Chicago, Ill., and Cedar Rapids, Iowa.
Sackett & Sons Co., The A. J., Baltimore, Md.

CYANAMID
American Agricultural Chemical Co., New York City.
American Cyanamid Co., New York City.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Jett, Joseph C., Norfolk, Va.
Taylor, Henry L., Wilmington, N. C.
Wellmann, William E., Baltimore, Md.

DENS—Superphosphate
Chemical Construction Corp., New York City.
Stedman's Foundry and Mach. Works, Aurora, Ind.

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CHEMICAL ENGINEER
22 Marietta Street Building ATLANTA, GA.
CABLE ADDRESS: "SULFACID ATLANTA"

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A Classified Index to Advertisers in "The American Fertilizer"

BUYERS' GUIDE

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DISINTEGRATORS
Atlanta Utility Works, East Point, Ga.
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

DRYERS—Direct Heat
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Sackett & Sons Co., The A. J., Baltimore, Md.

DRIVES—Electric
Link-Belt Company, Philadelphia, Chicago.

DUMP CARS
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

DUST COLLECTING SYSTEMS
Sackett & Sons Co., The A. J., Baltimore, Md.

ELECTRIC MOTORS AND APPLIANCES
Atlanta Utility Works, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.

ELEVATORS
Atlanta Utility Works, East Point, Ga.
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

ELEVATORS AND CONVEYORS—Portable
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

ENGINEERS—Chemical and Industrial
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

ENGINES—Steam
Atlanta Utility Works, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.

EXCAVATORS AND DREDGES—Drag Line and Cableway
Hayward Company, The, New York City.
Link-Belt Company, Philadelphia, Chicago.
Link Belt Speeder Corp., Chicago, Ill., and Cedar Rapids, Iowa.

FERTILIZER MANUFACTURERS
American Agricultural Chemical Co., New York City.
American Cyanamid Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Farmers Fertilizer Co., Columbus, Ohio
International Agricultural Corp., New York City.
Phosphate Mining Co., The, New York City.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.

FISH SCRAP AND OIL
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
Jett, Joseph C., Norfolk, Va.
McIver & Son, Alex. M., Charleston, S. C.
Taylor, Henry L., Wilmington, N. C.
Wellmann, William E., Baltimore, Md.

FOUNDERS AND MACHINISTS
Atlanta Utility Works, East Point, Ga.
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

GARBAGE TANKAGE
Wellmann, William E., Baltimore, Md.

GEARS—Machine Moulded and Cut
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

GEARS—Silent
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

GELATINE AND GLUE
American Agricultural Chemical Co., New York City.

GUANO
Baker & Bro., H. J., New York City.

HOISTS—Electric, Floor and Cage Operated, Portable
Hayward Company, The, New York City.
Jeffrey Manufacturing Co., The, Columbus, Ohio.

HOPPERS
Atlanta Utility Works, East Point, Ga.
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

IMPORTERS, EXPORTERS
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Wellmann, William E., Baltimore, Md.

IRON SULPHATE
Tennessee Corporation, Atlanta, Ga.

INSECTICIDES
American Agricultural Chemical Co., New York City.

LACING—Belt
Sackett & Sons Co., The A. J., Baltimore, Md.

LIMESTONE
American Agricultural Chemical Co., New York City.
American Limestone Co., Knoxville, Tenn.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Wellmann, William E., Baltimore, Md.

LOADERS—Car and Wagon, for Fertilizers
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

MACHINERY—Acid Making
Atlanta Utility Works, East Point, Ga.
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Chemical Construction Corp., New York City.
Duriron Co., Inc., The, Dayton, Ohio.
Fairlie, Andrew M., Atlanta, Ga.
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

MACHINERY—Coal and Ash Handling
Hayward Company, The, New York City.
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

MACHINERY—Elevating and Conveying
Atlanta Utility Works, East Point, Ga.
Hayward Company, The, New York City.
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

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MACHINERY—Power Transmission
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

MACHINERY—Pumping
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Duriron Co., Inc., The, Dayton, Ohio.

MACHINERY—Tankage and Fish Scrap
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Sackett & Sons Co., The A. J., Baltimore, Md.
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MAGNETS
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Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

MANGANESE SULPHATE
McIver & Son, Alex. M., Charleston, S. C.
Tennessee Corporation, Atlanta, Ga.

MIXERS
Atlanta Utility Works, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

NITRATE OF SODA
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Barrett Company, The, New York City.
Bradley & Baker, New York City.
Chilean Nitrate Sales Corp., New York City.
Huber & Company, New York City.
International Agricultural Corp., New York City.
McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.
Wellmann, William E., Baltimore, Md.

NITRATE OVENS AND APPARATUS
Chemical Construction Corp., New York City.

NITROGEN SOLUTIONS
Barrett Company, The, New York City

NITROGENOUS ORGANIC MATERIAL
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
DuPont de Nemours & Co., Wilmington, Del.
Huber & Company, New York City.
International Agricultural Corp., New York City.
McIver & Son, Alex. M., Charleston, S. C.
Smith-Rowland Co., Norfolk, Va.
Wellmann, William E., Baltimore, Md.

NOZZLES—Spray
Monarch Mfg. Works, Philadelphia, Pa.

PACKING—For Acid Towers
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Chemical Construction Corp., New York City.

PANS AND POTS
Stedman's Foundry and Mach. Works, Aurora, Ind.

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Chemical Construction Corp., New York City.

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Bradley & Baker, New York City.
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Schmaltz, Jos. H., Chicago, Ill.
Southern Phosphate Corp., Baltimore, Md.
Taylor, Henry L., Wilmington, Del.
Wellmann, William E., Baltimore, Md.

PIPE—Acid Resisting
Duriron Co., Inc., The, Dayton, Ohio.

PIPES—Chemical Stoneware
Chemical Construction Corp., New York City.

PIPES—Wooden
Stedman's Foundry and Mach. Works, Aurora, Ind.

PLANT CONSTRUCTION—Fertilizer and Acid
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.

POTASH SALTS—Dealers and Brokers
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
International Agricultural Corp., New York City.
Jett, Joseph C., Norfolk, Va.
Schmaltz, Jos. H., Chicago, Ill.
Taylor, Henry L., Wilmington, Del.
Wellmann, William E., Baltimore, Md.

POTASH SALTS—Manufacturers and Importers
American Potash and Chem. Corp., New York City.
Potash Co. of America, Baltimore, Md.
United States Potash Co., New York City.

PULLEYS AND HANGERS
Atlanta Utility Works, East Point, Ga.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
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PUMPS—Acid-Resisting
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Duriron Co., Inc., The, Dayton, Ohio.
Monarch Mfg. Works, Inc., Philadelphia, Pa.

PYRITES—Brokers
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., New York City.
Jett, Joseph C., Norfolk, Va.
Wellmann, William E., Baltimore, Md.

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Charlotte Chem. Laboratories, Inc., Charlotte, N. C.

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Chemical Construction Corp., New York City.

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Schmaltz, Jos. H., Chicago, Ill.
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SEPARATORS—Air
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SEPARATORS—Including Vibrating
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SHOVELS—Power
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Link-Belt Speeder Corp., Chicago, Ill., and Cedar Rapids, Iowa.
Sackett & Sons Co., The A. J., Baltimore, Md.

SPRAYS—Acid Chambers
Monarch Mfg. Works, Inc., Philadelphia, Pa.

SPROCKET WHEELS (See Chains and Sprockets)

STACKS
Sackett & Sons Co., The A. J., Baltimore, Md.

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Freeport Sulphur Co., New York City.
Texas Gulf Sulphur Co., New York City.

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Taylor, Henry L., Wilmington, N. C.

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Wellmann, William E., Baltimore, Md.

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Ashcraft-Wilkinson Co., Atlanta, Ga.
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Schmaltz, Jos. H., Chicago, Ill.
Taylor, Henry L., Wilmington, N. C.
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Wellmann, William E., Baltimore, Md.

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Armour Fertilizer Works, Atlanta, Ga.
International Agricultural Corp., New York City.
Phosphate Mining Co., The, New York City.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.

SYPHONS—For Acid
Monarch Mfg. Works, Inc., Philadelphia, Pa.

TALLOW AND GREASE
American Agricultural Chemical Co., New York City.

TANKAGE
American Agricultural Chemical Co., New York City.
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Sackett & Sons, Co., The A. J., Baltimore, Md.

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Charlotte Chem. Laboratories, Inc., Charlotte, N. C.

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Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.

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Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

UREA
DuPont de Nemours & Co., E. I., Wilmington, Del.

UREA-AMMONIA LIQUOR
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VALVES—Acid-Resisting
Atlanta Utility Works, East Point, Ga.
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
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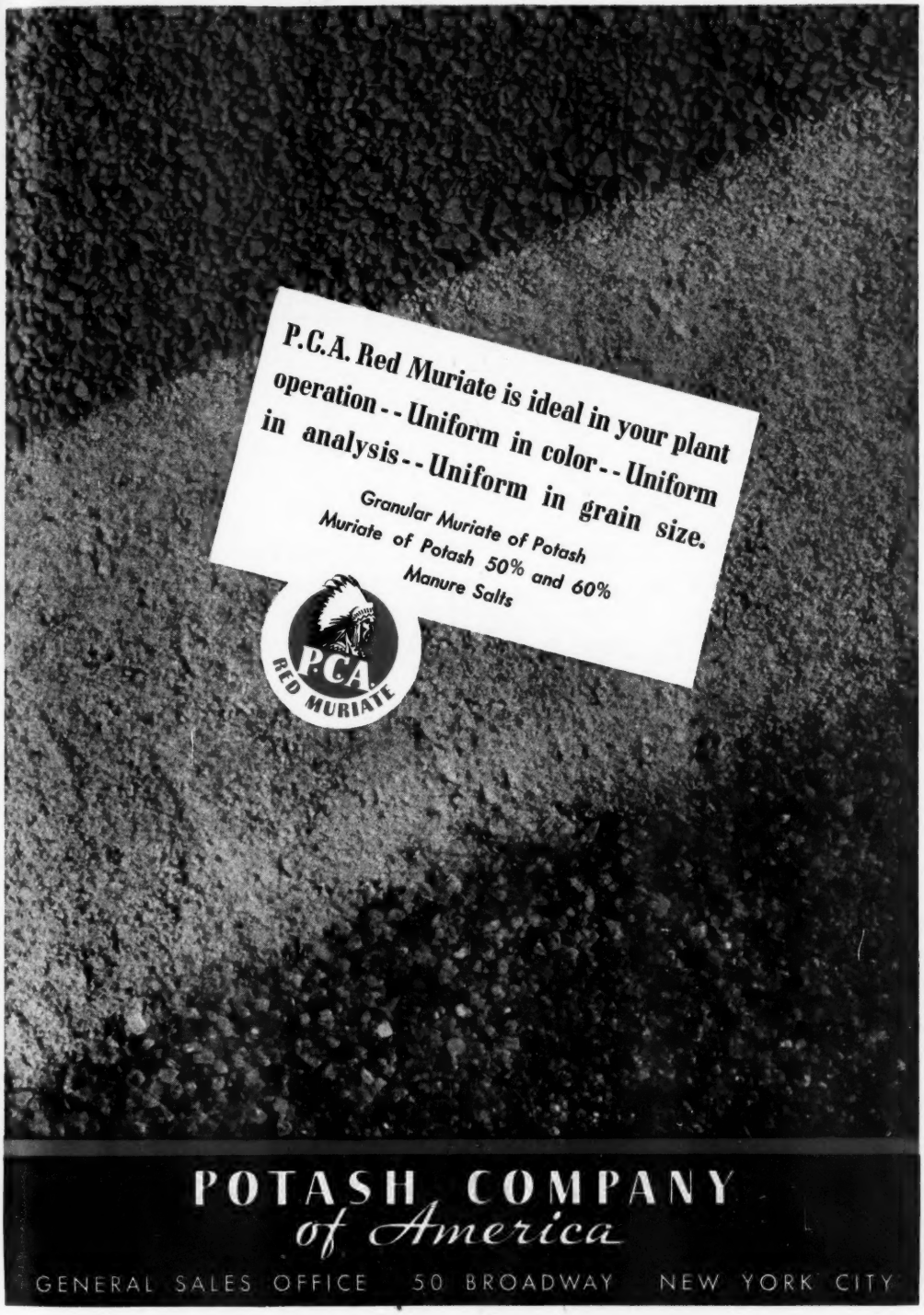
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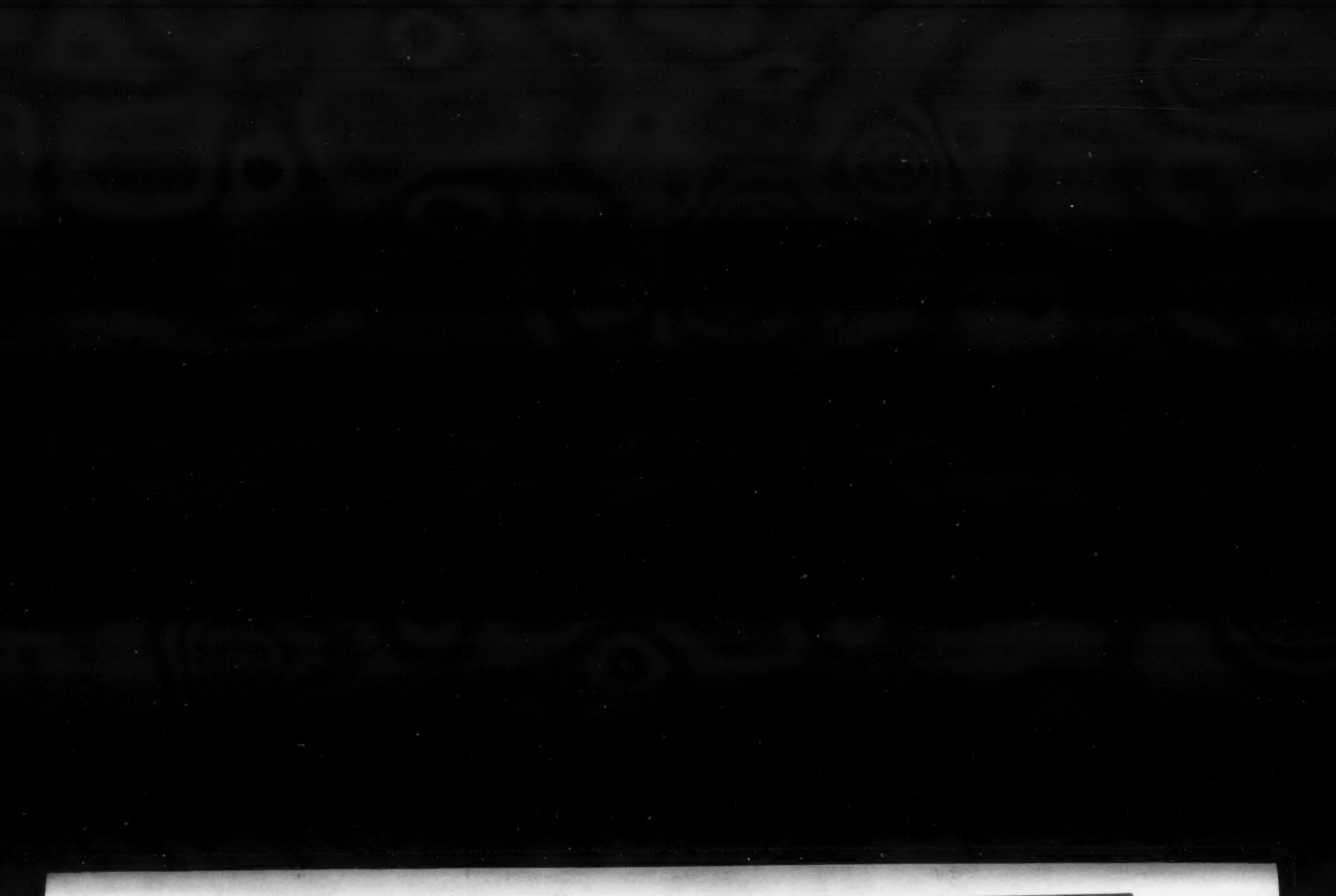
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